

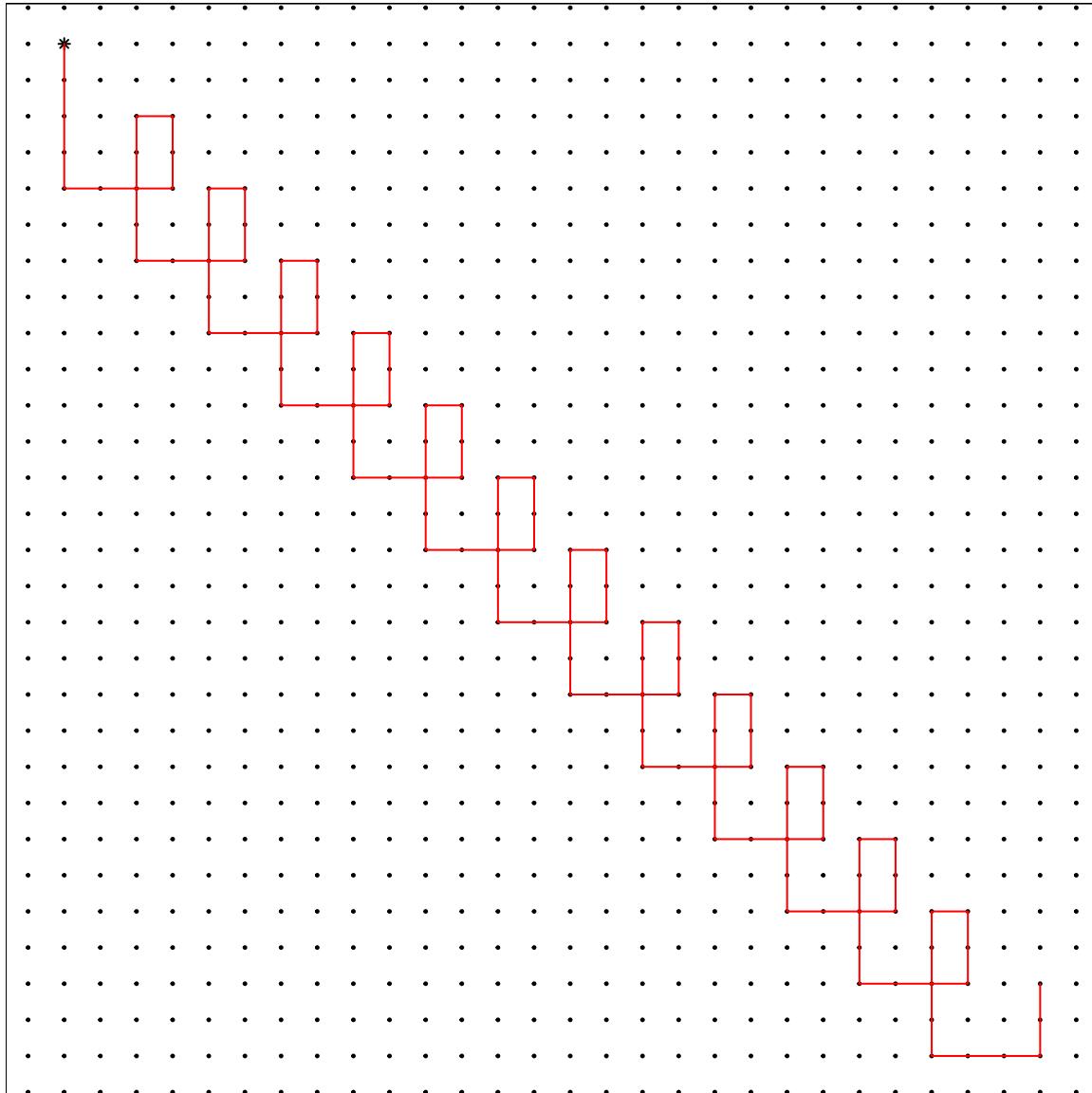
Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Grid Countdown Spirals

Follow the teacher! Use a ruler!

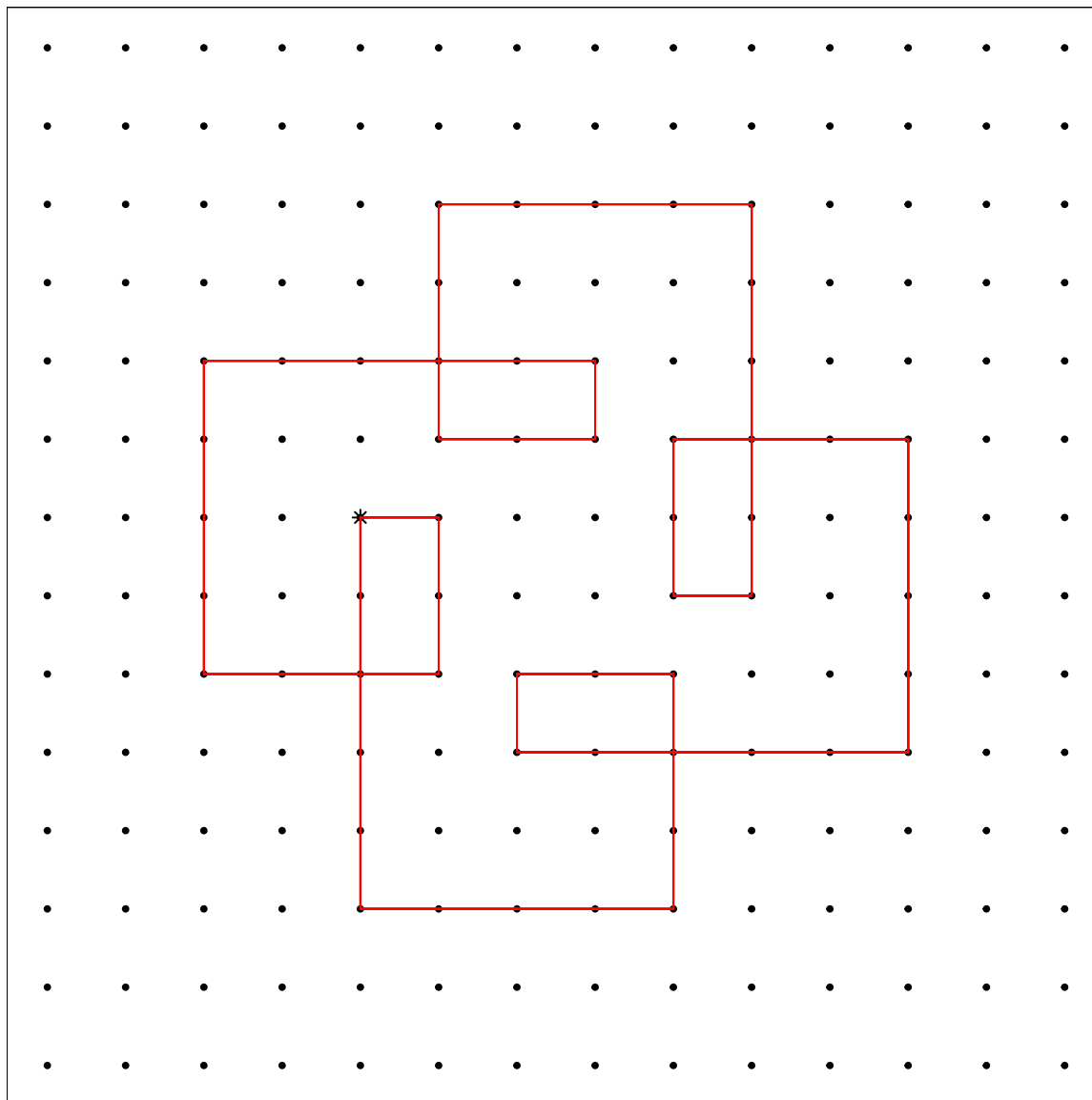
1. Start at the star.
2. Go down 4 units.
3. Go right 3 units.
4. Go up 2 units.
5. Go left 1 unit.
6. Repeat steps 2 through 5... Notice a  $90^\circ$  turn counterclockwise after each segment.



- Describe the result:

This time, count down from 5. Remember... Down, Right, Up, Left!

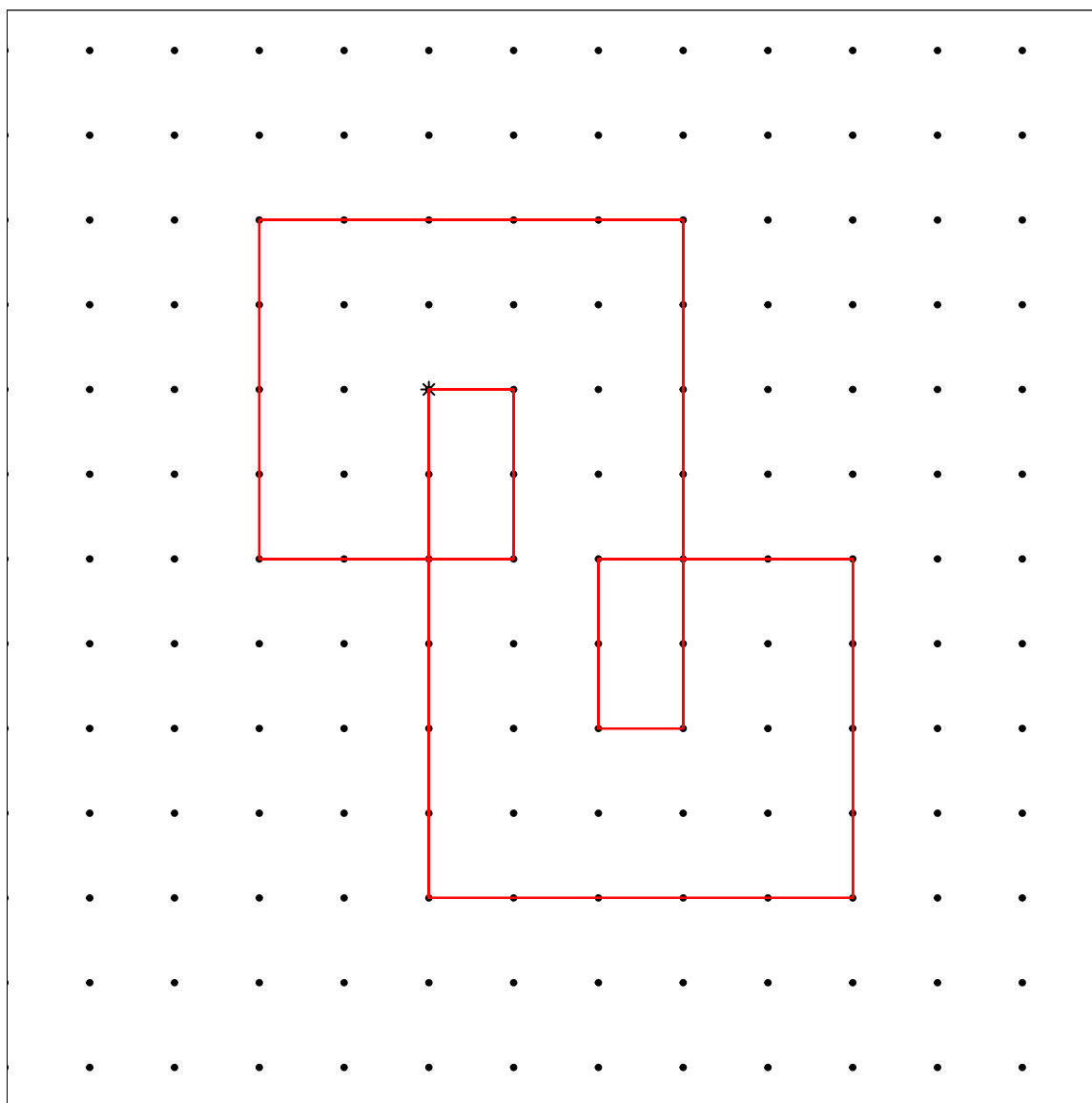
1. Start at the star, heading down.
2. Move 5 and then turn  $90^\circ$  counterclockwise.
3. Move 4 and then turn  $90^\circ$  counterclockwise.
4. Move 3 and then turn  $90^\circ$  counterclockwise.
5. Move 2 and then turn  $90^\circ$  counterclockwise.
6. Move 1 and then turn  $90^\circ$  counterclockwise.
7. Repeat steps 2 through 6.



- Describe the result:

This time, count down from 6. Remember... Down, Right, Up, Left!

1. Start at the star, heading down.
2. Move 6 and then turn 90° counterclockwise.
3. Move 5 and then turn 90° counterclockwise.
4. Move 4 and then turn 90° counterclockwise.
5. Move 3 and then turn 90° counterclockwise.
6. Move 2 and then turn 90° counterclockwise.
7. Move 1 and then turn 90° counterclockwise.
8. Repeat steps 2 through 7.



- Describe the result:

A 20x20 grid of black dots. A red path is drawn, starting from the bottom-left and ending at the top-right, with a small asterisk marking a point on the path. The path is a complex, non-linear sequence of horizontal and vertical segments connecting the dots. The asterisk is located at the intersection of the 10th column and the 10th row from the bottom-left.

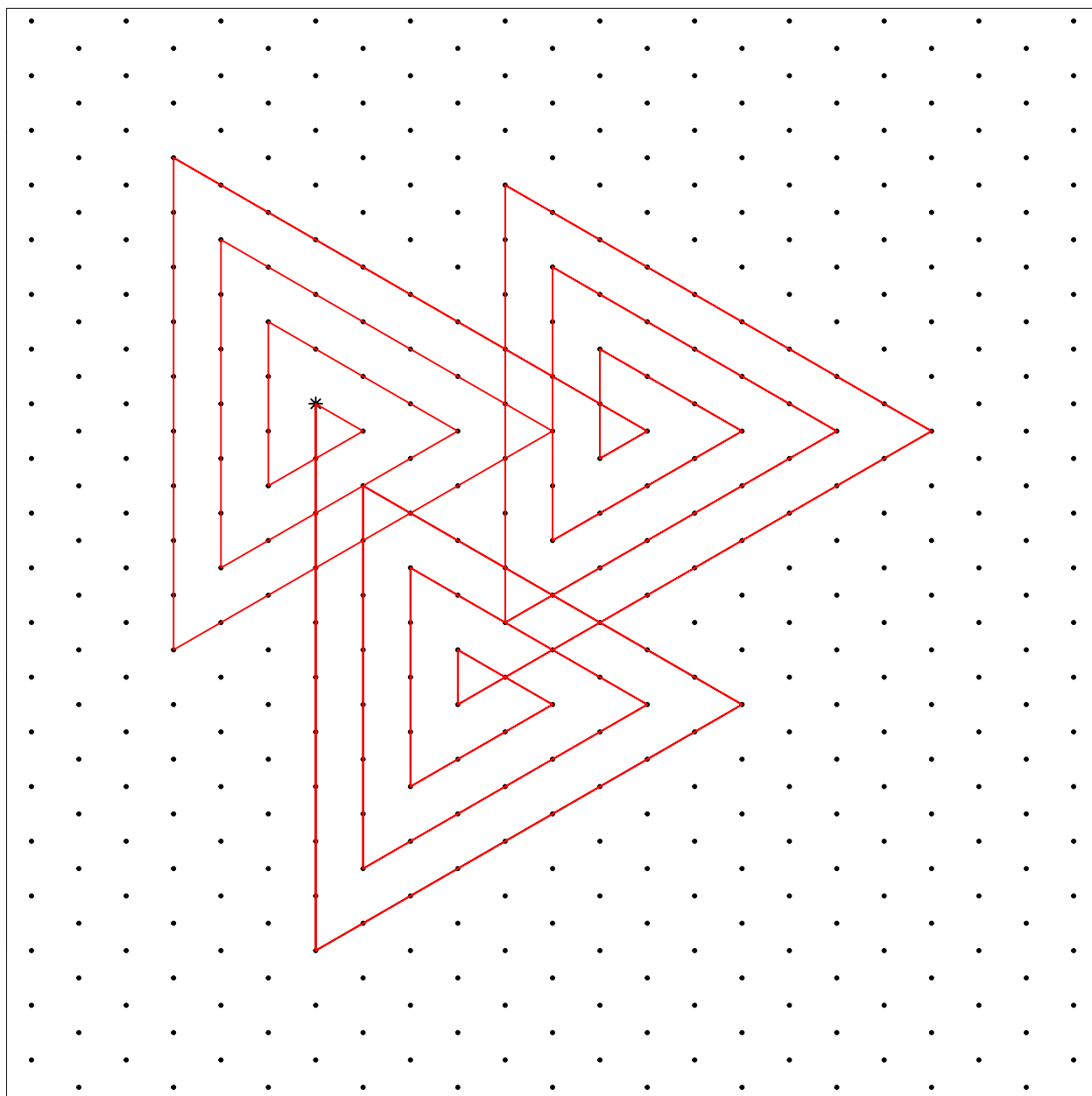
- 4

A 20x20 grid of black dots. A red path is drawn, starting from the bottom-left and moving in a complex, non-linear fashion towards the top-left. The path consists of several connected horizontal and vertical segments. An asterisk (\*) is located at the intersection of the 10th column and the 15th row (from the bottom-left corner).

- 5

This time, turn  $120^\circ$  counterclockwise after each segment. And count down from 10. (And still start at star heading down.) This time I've started the pattern for you.

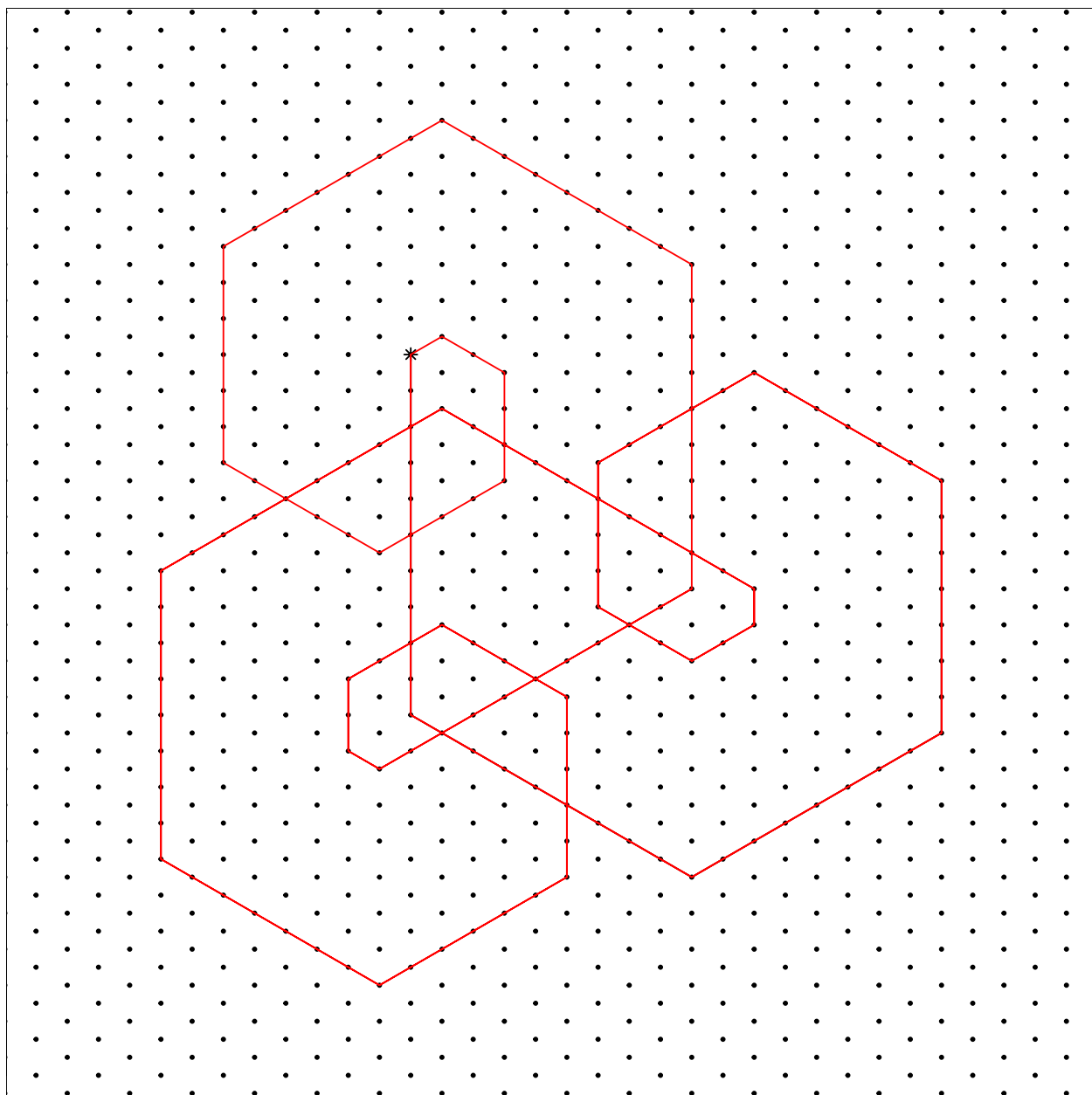
- The directions are: Down, Up-Right, Up-Left, Down, Up-Right, Up-Left...



- Describe the result:

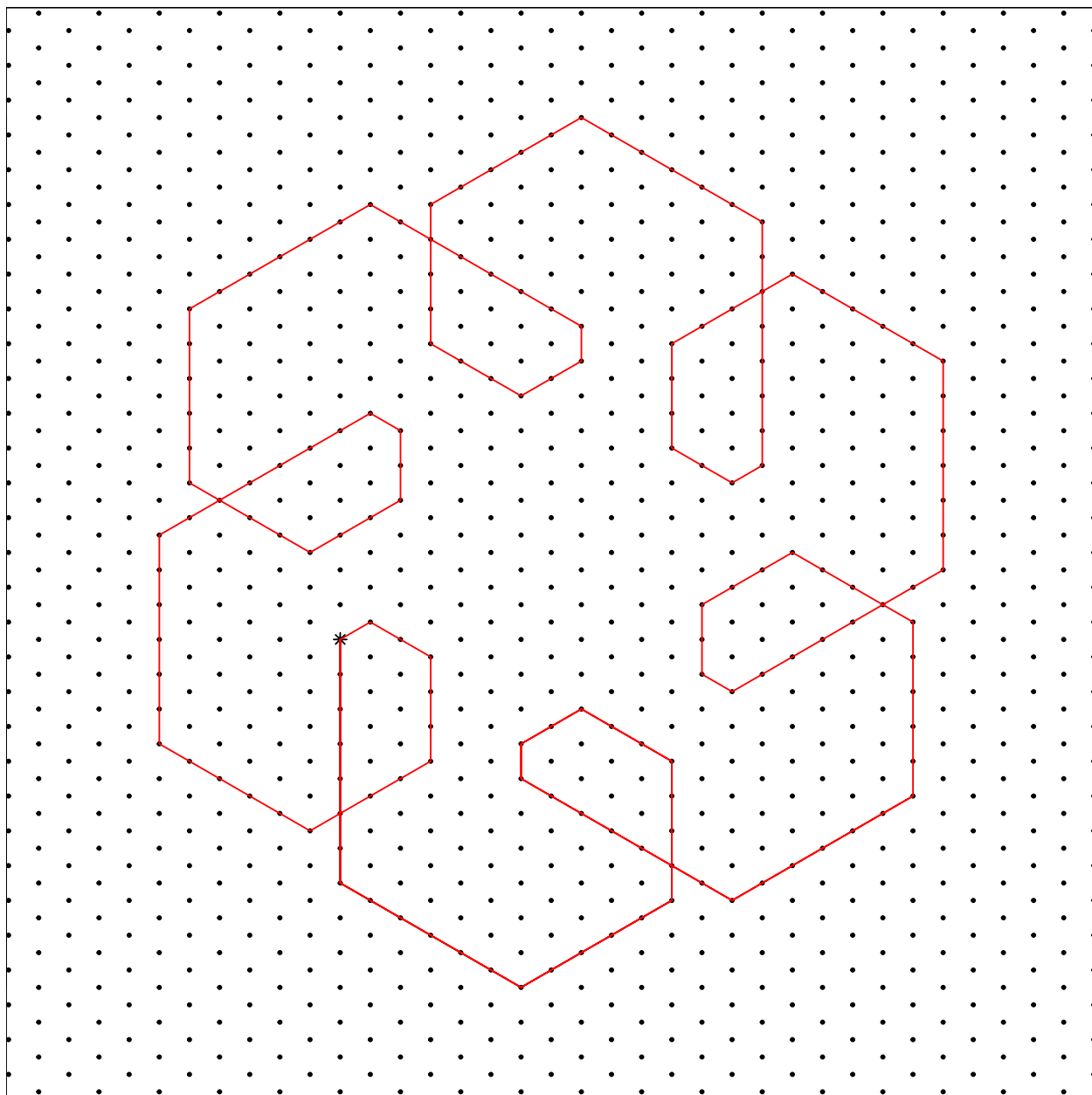
This time, turn  $60^\circ$  counterclockwise after each segment. And count down from 10. (And still start at star heading down.) This time I've started the pattern for you.

- The directions are: Down, Down-right, Up-right, Up, Up-left, Down-left...



- Describe the result:

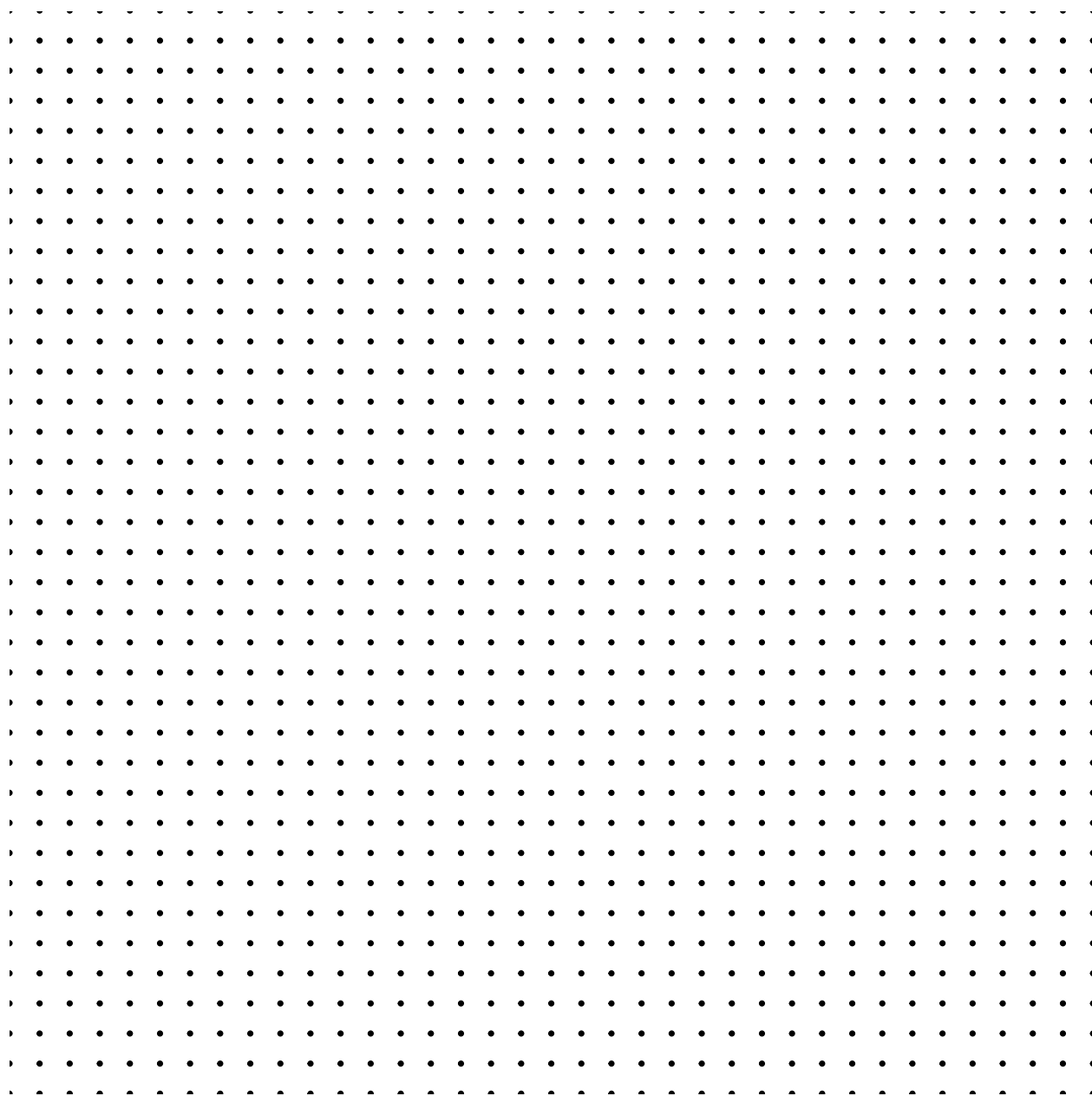
This time, turn  $60^\circ$  counterclockwise after each segment. And count down from 7. (And still start at star heading down.) This time I've started the pattern for you.



- Describe the result:

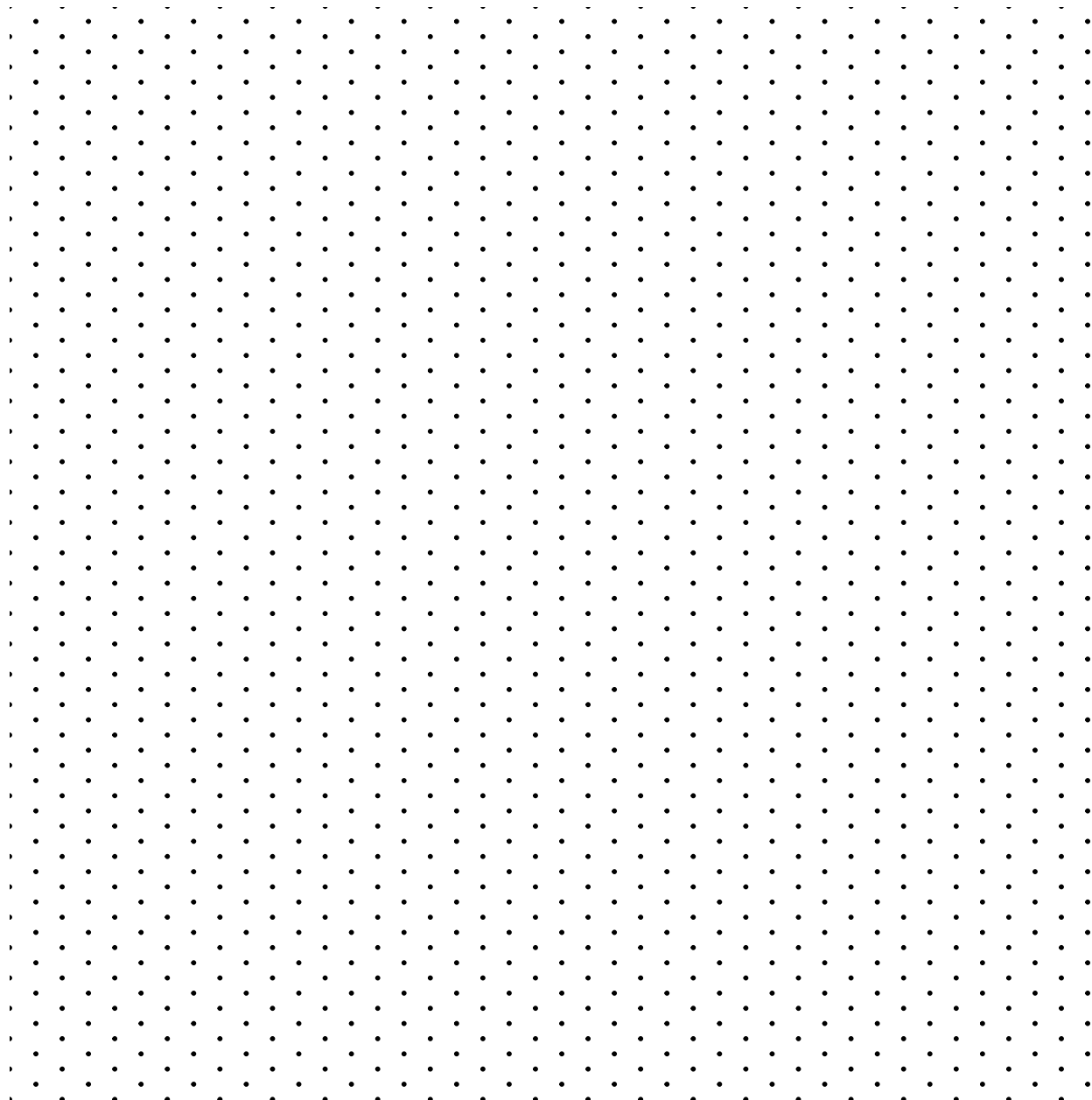


Design your own variations of the patterns shown above. Explain the algorithm used to generate the images!



Explain your algorithm:

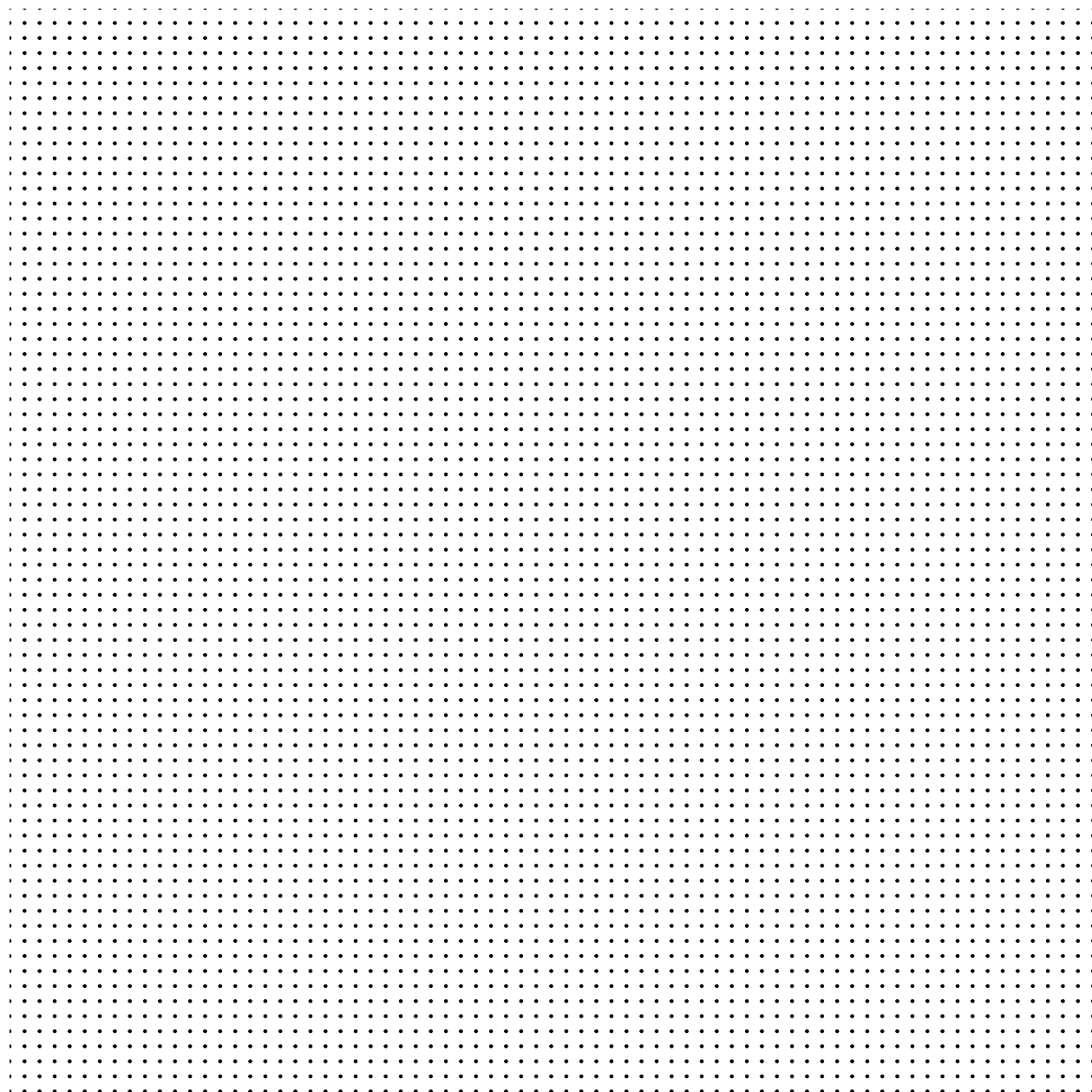
Design your own variations of the patterns shown above. Explain the algorithm used to generate the images!



Explain your algorithm:

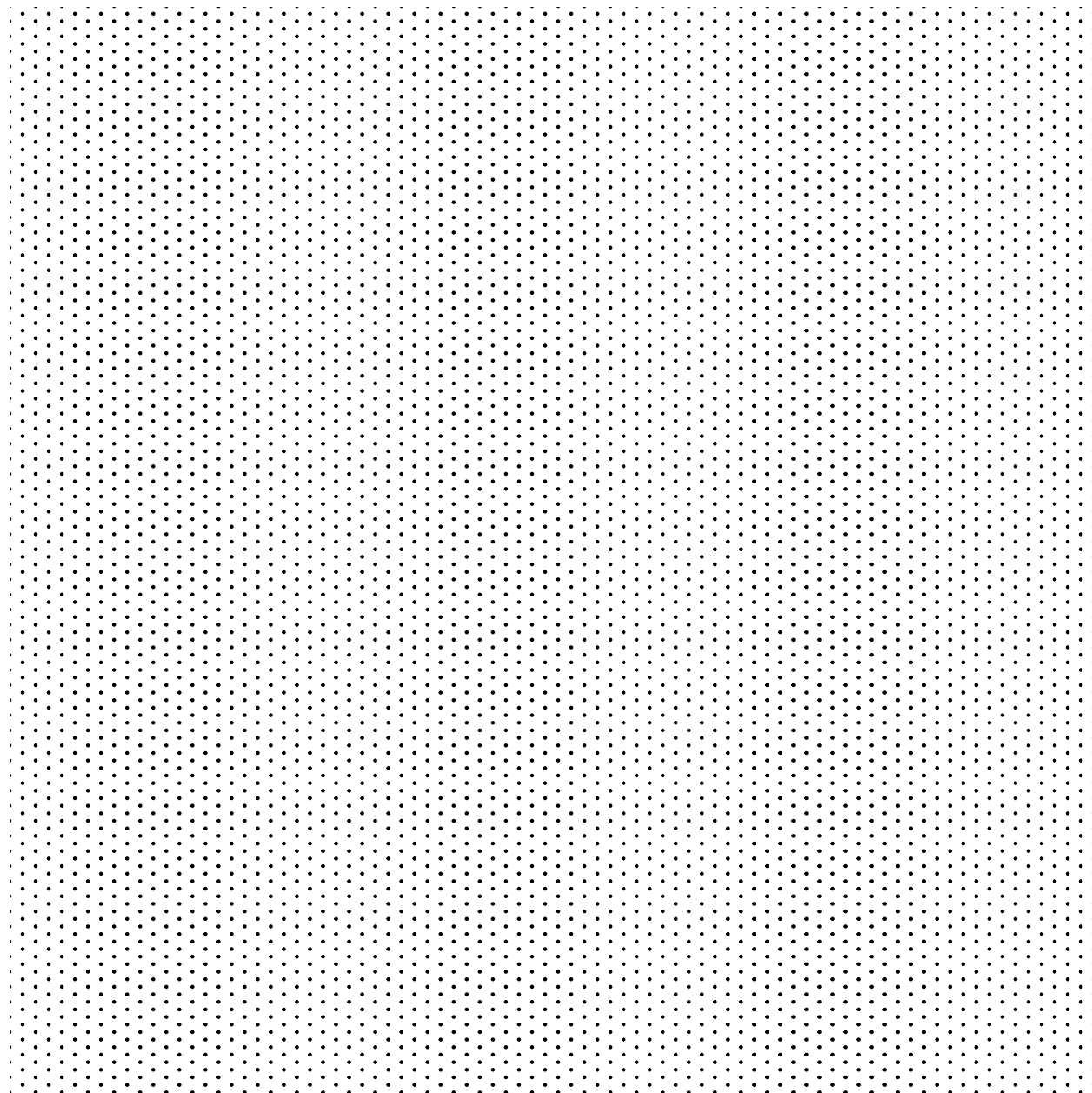
- Describe the result:

Design your own variations of the patterns shown above. Explain the algorithm used to generate the images!



Explain your algorithm:

Design your own variations of the patterns shown above. Explain the algorithm used to generate the images!



Explain your algorithm: